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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,864	01/19/2004	Robert T. Froebel	BUR920030140US1	1863

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EXAMINER	
AKANBI, ISIAKA O	
ART UNIT	**PAPER NUMBER**
2877	

DATE MAILED: 02/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/707,864	FROEBEL ET AL.	
	Examiner	Art Unit	
	Isiaka O. Akanbi	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8 June 2004*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement file 8 June 2004 has been entered and reference considered by the examiner.

Drawings

The examiner approves the drawings filed 19 January 2004.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 -16 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshida (2001/0024278 A1).

As regard to claim 1, Yoshida discloses a system of alignment marks formed on a substrate, the substrate to be used in a photolithographic system having first and second alignment signal sources (10/13) and the alignment marks and signal detectors (14/16/18) comprising of the following: a first region (14/16/18) configured to provide a first signal to the first signal detector (14/16/18) in response to the first alignment signal source and a second region (10/13) configured to provide a second signal to the second signal detector (14/16/18) in response to the second alignment signal source, wherein the first signal determines multiple first coordinates of an aligned position of the substrate, the second signal determines multiple second coordinates of an aligned position of the substrate, and the substrate is in a coarse aligned position with the photolithographic system when one of the multiple first coordinates and one of the multiple second coordinates correspond to a maximum received signal strength at the first signal detector and the second signal detector, respectively (fig. 1)(page 5, par. 0064).

As to claim 2, according to claim 1, Yoshida discloses wherein the first region and the second region are an X mark diffraction pattern and a Y mark diffraction pattern, respectively (fig. 2)(page 5, par. 0064).

As to claim 3 and 4, Yoshida discloses wherein the X mark diffraction pattern further comprises a segment of a Y mark in the X mark and the Y mark diffraction pattern further comprises a segment of an X mark in the Y mark (fig. 2 and fig. 16)(page 5, par. 0064-0069).

As to claim 5, Yoshida discloses wherein the segment of an X mark in the Y mark and the segment of a Y mark in the X mark are located in a middle portion of the X mark and Y mark, respectively (fig. 2 and fig. 16).

As to claim 6, Yoshida discloses wherein a segment of a Y mark and a segment of the X mark are removed (fig. 3 and fig. 8)(page 6, par. 0072)(page 8, par. 0103).

As to claim 7, Yoshida discloses wherein a segment of the Y mark and a segment of the X mark are removed and replaced by segments of a different orientation than the X mark and the Y mark, respectively (page 5, par. 0064-0069).

As to claims 8 and 9, Yoshida discloses wherein each segment removed corresponds to regions of the X mark and Y mark that cause false alignments (fig. 3, fig. 6 and fig. 8)(page 5, par. 0066).

As to claim 10, Yoshida discloses wherein the segments of different orientation are located from +/-45° to +/-90° relative to the X mark and the Y mark (page 2, par. 0019)(page 5, par. 0061)(page 8, par. 0094)(fig. 1).

As regard to claims 11 and 14, Yoshida discloses a method for searching and aligning alignment marks formed on a substrate in a diffraction pattern alignment system comprising of the following:

locating a segment of a Y mark in an X mark, illuminating the segment of a Y mark in an X mark with a Y-alignment signal source, measuring received signal strength of the diffraction pattern at a first signal detector, moving the X mark in an X-direction, repeating the illuminating, measuring and moving until the received signal strength of the diffraction pattern at the first signal detector is zero, determining a location of an approximate center of the segment of a Y mark in an X mark as a maximum of the measured received signal strength, illuminating the X mark with the X-alignment signal source, detecting multiple aligned positions received at a second signal detector as a result of illuminating the X mark, searching the multiple aligned positions detected for a single aligned position in the X direction that corresponds to the location

of the approximate center of the segment of a Y mark in an X mark and selecting an aligned position of the X mark in the X-direction in accordance with the single aligned position that corresponds to the location of the approximate center of a Y mark in an X mark (fig. 1 and fig. 16)(page 8, par. 0094-0096)(page 1, par. 0009)(page 2, par. 0017-0018 and par. 0020).

As to claims 12, Yoshida discloses wherein moving the X mark in an X-direction is performed by moving the X mark in relation to the Y-alignment signal source by a specified amount in the X-direction until the Y-alignment signal source has passed the segment of a Y mark in an X mark (fig. 1).

As to claims 13 and 16, Yoshida discloses wherein selecting the aligned position occurs when the maximum of the received signal strength is greater than or equal to a predetermined threshold (page 2, par. 0017-0018).

As to claim 15, Yoshida discloses wherein moving the Y mark in the Y-direction is performed by moving the Y mark in relation to the X-alignment signal source by a specified amount in the Y-direction until the X-alignment signal source has passed the segment of an X mark in a Y mark (fig. 1).

Additional Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references listed in the attached form PTO-892 teach of other prior art system of alignment marks formed on a substrate that may anticipate or obviate the claims of the applicant's invention.

Conclusion

Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isiaka Akanbi whose telephone number is (571) 272-8658. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on (571) 272-2800 ext. 77. The fax phone

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Isiaka Akanbi
January 26, 2006

Gregory J. Toatley, Jr.
Supervisory Patent Examiner
31 JAN 06